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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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09/740,419

12/19/2000

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(POO-3078)

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01/06/2005

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EXAMINER

PAN, DANIEL H

ART UNIT

PAPER NUMBER

2183

DATE MAILED: 01/06/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Applicati n N .

09/740,419

Applicant(s)

SEZNEC ET AL.

Examiner

Daniel Pan

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 27 October 2004.  
2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.  
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-23 is/are pending in the application.  
4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.  
5) ☒ Claim(s) 22 and 23 is/are allowed.  
6) ☒ Claim(s) 1-4, 6, 11-15 and 17 is/are rejected.  
7) ☒ Claim(s) 5, 7-10, 16 and 18-21 is/are objected to.  
8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.  
10) ☒ The drawing(s) filed on 04 March 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)  
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)  
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 02/20/01, 02/14/02.  
4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.  
5) ☐ Notice of Informal Patent Application (PTO-152)  
6) ☐ Other: \_\_\_\_\_.

1. Claims 1-23 are presented for examination.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-4,6,11-15,17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tran (5,752,259) in view of Drako et al. (5,371,877).

As to claims 1,12, Tran disclosed a system including at least :

- a) a branch predictor (see fig.1 , the combination of instruction cache 22 and branch prediction unit 37) including multi bank prediction array (see plurality of banks 0-M-1 in fig.5) that was used for predictions of conditional branch instructions (see col.6, lines 19-36 and fig.4, col.12, lines 1-59 for the structure of the multi-bank , see how the branch prediction unit was used with the memory banks to resolve the conflict in col.10, lines 25-47, see col.12, lines 55-67, col.13, lines 1-42 for the detailed description of the prediction unit 37 guaranteed addressing to different banks);
- b) a bank control unit [prediction unit 37] to ensure that two accesses to the bank array do not conflict (see how the branch prediction unit was used with the memory banks to resolve the conflict in col.10, lines 25-47, see col.12, lines 55-67, col.13, lines 1-42 for

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the detailed description of the prediction unit 37 guaranteed addressing to different banks).

3. Tran did not specifically show that his memory bank was a single ported memory as claimed. However, Drako disclosed a system including a memory bank with a single port (see fig.2 [bank 0 single port], see the single port bank in col.5, lines 21-24). It would have been obvious to one of ordinary skill in the art to use Drako in Tran for including the single ported memory bank as claimed because the use of Drako could provide Tran the storage ability to accept specific access read and write request at a given memory bank port, thereby reducing the memory hardware, and it could be readily accomplished by presetting the interface parameters, such as the R/W port width, of the single-ported memory banks of Drako into Tran so that the single-ported memory banks of Drako could be recognized by Tran, and because one of ordinary skill in the art should be able to recognize the advantage of using a single port of a memory bank, such as one taught by Drako, would not be changed regardless of the type of the memory units (e.g. array, bank, cell, segment etc.), and for doing so, provided a motivation.

4. As to claims 2,11,13, Tran also fetched at least two slot of instructions in one cycle (see the instruction blocks fetched during clock cycle 0 in col.9, line 67, col.10, lines 1-2).

5. As to claims 3,14, Tran also included a multiplexer (e.g. see the selector in col.12, lines 10-21).

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6. As to claims 4,15, Tran also determined an index value (e.g. see the index in col.15, lines 7-13).

7. As to claims 6,17, Tran also used at least 2 bits to be a bank number (see the 0 and 1 banks, see col. freely selected bank number in col.12, lines 55-67, col.15, lines 1-3).

8. Claims 5,16 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. None of the prior art of record further teaches the bank identifier for the conditional branch that was different than the bank identifier for a conditional branch that was last used. Tran disclosed bank identifier (bank0-bank7), but it did not teach the determination of the difference of the bank identifier of the last used to access the prediction array.

9. Claims 7-9, 18-20 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. None of the prior art of record further teaches the details of the comparison of the two bits value with the last used bank number.

10. Claims 10, 21 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. None of the prior art of record further

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teaches the pair of the 4-1 mux from the output of the single ported bank. Tran had a multiplexer (selector) , but it was neither a 4-1 mux nor a pair of 4-1 mux.

11. Claims 22,23 are allowable over the art of record. None of the prior art of record teaches the combined features of the generation of the index from the conditional instruction address, the selection of two bits from the index, the comparison of the two bits with previous bank number determined by the conditional branch previously used to access the prediction array, the use of the two bits as current bank number if the previous bank number differs, and the change of the bank number if the previous bank number is equal for a conditional branch to access the prediction array .

12. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

a) Gaither et al. (4,453,212) is cited for the basic teaching in the use of index value to selected memory segments (see col.5, lines 8-50).

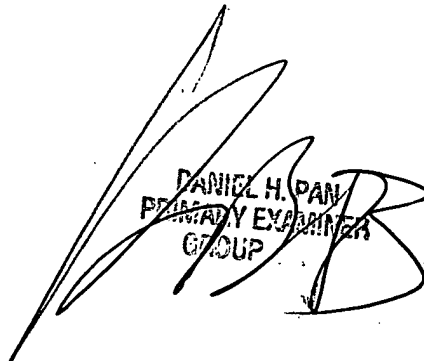
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dan Pan whose telephone number is 703 305 9696, or the new number 571 272 4172. The examiner can normally be reached on M-F from 8:30 AM to 4:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chan, can be reached on 703 305 9712, or the new number 571 272 4162. The fax phone number for the organization where this application or proceeding is assigned is 703 306 5404.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

*21 Century Strategic Plan*

  
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PRIMARY EXAMINER  
GROUP